

### ABSTRACT OF THE DISCLOSURE

A system and method for auto-addressing devices on a multiplexing bus in which a plurality of devices are arranged in series, with each having a bus in and bus out. During an initial evaluation, and beginning with a low bus in, each device inverts the incoming signal so that a device with a low bus in has a high bus out. During a second evaluation, the high or low state of the bus in is inverted only if the bus out in the first evaluation was high. Similarly, during a third (and subsequent) evaluation, the high or low state of the bus in is inverted only if the bus out state of all previous evaluations was high. Ultimately, only one device will have a high bus out, with all bus out states from previous evaluations also having been high, at which point all addresses are fully decoded. The system works equally well with a "low bus out" of all evaluations being used to determine inversion.